Beyond Internet banking

WELLS FARGO IS TAKING THE DATA WAREHOUSE PUBLIC.

by Patric Helmaan

Moving data warehousing from private, internal operations to public use requires moving into new territory. But moving into new territory has always held a special appeal to Wells Fargo & Co.

Since 1852, Wells Fargo has focused on using technology to deliver high-quality service—with speed. The bank was a leader in the establishment and operation of stagecoach lines in the United States, and it was one of the original underwriters of the fabled cross-country Pony Express system of mail delivery, adding rail, telegraph and other speed-enhancing tools as they became available. The company again backed an emerging technology when it began offering Internet-based services in the 1990s. Known for its commitment to transcontinental and over-the-seas service, the company is now a global provider of financial services.

Those services grew quite a bit more ambitious with the launch of My Spending Report in January 2005. The pioneering new program uses the resources of a Teradata Warehouse to provide an online tool that collects and summarizes a consumer's transactions—credit card, debit card, checking account and online bill payments—and generates a report for review and analysis during online banking sessions. Customers gain a live, 360-degree view of their finances, from managing payments to analyzing spending patterns.

The undertaking was not launched lightly. Wells Fargo, always on the cutting edge of innovation and customer service, understood full well the difference between merely providing downloadable account information for use with outside programs and committing to making interactive analytical tools available online. Providing a robust online banking service to the bank's customers was paramount in driving the effort.

Among those managing the analytical tools is Terry Johnson, technology manager for Internet services development. Bringing a depth of both retail and financial services IT experience to the My Spending Report project, Johnson meticulously planned, constantly nourished and carefully maintained the project. This detailed work became clear during a recent conversation with *Teradata Magazine.*

A heritage of security

SECURITY IS INEXTRICABLY built into Wells Fargo's history. There was a time, in fact, a century and a half or so ago, when the company's reputation for building security matched its reputation for delivering it.

Neatly tucked under a stagecoach driver's seat was the legendary Wells Fargo treasure box, fashioned of Ponderosa pine, oak and iron, and painted a distinctive green. The padlocked boxes, specially designed to fit underneath the driver's seat, were just the right weight to be carried on a guard's shoulder and could hold 100 to 150 pounds of currency, bullion, gold dust or documents. The precious cargo made security aboard the stagecoaches of paramount importance—just as it is in the company's present-day handling of customer data.

Q: My Spending Report is an ambitious undertaking, to say the least. What were the goals of the project?

A: The key objective was to allow our customers to have better analytical tools. We wanted to create an extension of the online banking experience, to show the maturity of the experience. It was important to us that the product was a real companion to the nuts and bolts of making payments and monitoring checking and savings accounts.

It was important that the product be easy to use and that it didn't require any cross-tool integration. Plus, clearly, we had to adhere to every one of the company's standards for secured Web sites that handle financial information and transactions.

Q: Like downloading data to an external financial program?

A: Yes. What we set out to create was a product that was immediately advantageous to the customer; everything takes place live within the customer's online banking session.

Q: How live? Is this a real-time or near real-time application?

A: We load new data every night, unlike (monthly) statements that you might get from your credit card company.
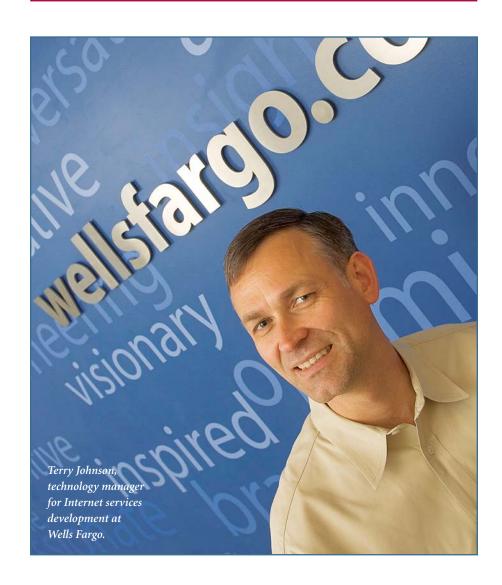
Q: How many customers are we talking about?

A: We have a potential audience of more than 7 million active online consumer customers, and a significant portion of customers are using it on a regular basis. We also have the service available for our small business customers. **>**

Close-up: Terry Johnson

HOBBIES: A resident of Oakland, Calif., and an avid gardener who takes delight in the Bay Area's comfortable climate, Terry has been applying his horticultural skills to an expanding array of ornamentals and succulents.

WORK HISTORY: Terry worked on data warehouse applications in the department store division of Target Corporation. Johnson has also spent time in the financial services and brokerage technology fields. He joined Wells Fargo in September 2004.

Terry Johnson, technology manager for Internet services development at Wells Fargo.

Q: Did you drive the project from an existing data warehouse, or did you deploy a dedicated data warehouse for My Spending Report?

A: It's a separate data warehouse. Our solution was to establish a discreet data warehouse for the product, guided by best practices of data warehouse design, ETL (extract, transform and load) technology and the Teradata RDBMS (relational database management system).

My Spending Report functions within a J2EE (Java 2 Platform, Enterprise Edition) framework, standards and patterns. We employ established best practices in pattern design data objectifi-cation and data warehouse design, with an emphasis on redundancy and accuracy.

And of course the project is designed for use by consumers and small busi-nesses. That had to be kept in the forefront of our plans.

Q: So you were able to configure the technology for consumers. What distinct considerations did that involve?

A: Offering customer-facing services carried a lot of special challenges. We had a high availability requirement: 24/7/365. We didn't have the luxury of being able to take the database offline. We couldn't send out internal notices that the services would be unavailable at certain periods of time. Those just weren't options.

Q: The company prides itself on delivering quality to its cus-tomers. And how does that differ in the data warehouse environ-ment—what new considerations did you face when customers weren't co-workers and col-leagues but actual customers?

A: It brought up some cultural questions, interestingly enough. Traditionally, the culture of analytical data warehouses is internally focused. Typically you are generating material for internal con-sumption. This application's uses were

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By the numbers

ASSETS	**$435 billion**
TEAM MEMBERS	**150,500+**
CUSTOMERS	**23 million**
STORES	**6,130**
ATMS	**6,303**
MARKET VALUE OF STOCK	**$104 billion**

INDUSTRY RANKINGS

RETAIL BANKING CROSS-SELL	**#1**
SMALL BUSINESS LENDER	**#1**
AGRICULTURAL LENDING	**#1**
CROSS-CHANNEL CUSTOMER EXPERIENCE	**#1**
INSURANCE BROKERAGE SALES*	**#1**
PRIME HOME EQUITY LENDER	**#1**

*Wells Fargo owns the largest bank-affiliated insurance broker.

not traditionally business intelligence data-centric. The rigors differ from those involved with developing sensitive customer-facing systems.

And of course all of it had to fit within the context of Wells Fargo Online.

But we had a combined team with lots of experience. We understood the constraints, understood the nature of secure sites. At the same time, we appreciated the importance of building a data warehouse that could scale, could grow—was able to expand with new dimensions, new customer information, new services.

We tried hard not to give up the traditional data warehouse advantages for the sake of other consumer requirements.

Q: And one would assume that because you're dealing with individual customer information, the compliance and security requirements were different during that development process than they would be when developing an internal application.
A: They were quite different. We physically separated development from production for those very crucial privacy, security and compliance reasons.

Q: And carried with it all the customer/consumer-related security issues.
A: Yes—compliance was a big part of the process. We knew that we couldn't launch without being able to guarantee absolute security and privacy as well as absolute accuracy of transaction information.

Q: And constant testing, no doubt.
A: We did considerable performance benchmarking of the product before we launched. We tried to identify every

Teradata brought experience, strong data models and strong designs. We architected for growth and capacity, which will let us continue to evolve, continue to make the product more feature-rich.

possible problem and deal with it. The sizeable number of transactions within the database was something we had to take into account, something that required much more than a cursory analysis of the database.

We did a great deal of volume testing of constraints and test cases, sharpening our ability to tune the parsing engines, tend queries and support high levels of concurrency.

We projected and tested for worst-case scenarios, but that's also critical in customer-facing operations.

Q: What role did Teradata play?
A: Teradata Professional Services brought their data warehouse architecture leadership experience, strong data models and strong designs. They worked very closely with us to review those models and designs, hardware and infrastructure choices.

This was not a small point. Something like this doesn't come cheap, and the company wanted to make sure it wasn't buying something that would have to be replaced quickly. So we architected for growth and capacity. And J2EE is architected for scalability. All of which will let us continue to evolve, continue to make the product more feature-rich.

Q: And how has it gone since the launch?
A: Customer response has been strong

and enthusiastic, and the system has performed well, delivering what we promised.

It's been gratifying for the whole team as well. This was one of those projects that's really nice to be involved in. We've created a technical service that's a real service to the customer, one that lets them analyze their spending behavior, that provides tools that let them become better at budgeting. **T**

Patric Helmaan is a writer and consultant whose work deals with the acceleration of technology and the challenges of technological innovation.

Behind the solution

Teradata Warehouse powered by:
Teradata Database V2R5.1, 4-node 4980 NCR Server

Storage
Total disk: 4TB

Operating System:
UNIX MP-RAS

Teradata Tools & Utilities:
FastLoad, MultiLoad, Teradata Manager, Teradata Utility Pack